

PROJECT: DTMF REMOTE COMMANDS ON THE UV-5X3

(REQUIRES CHIRP SOFTWARE & A PROGRAMMING CABLE)

INTRODUCTION: BRIEF DTMF COMMANDS EXPLANATION

Any Radio with DTMF Ability can be used to send Remote Commands to a UV-5X3. For illustration purposes, and as an introduction to the function, we will explain this feature by using 2 UV-5X3s.

The UV-5X3 is capable to listening for Over-the-Air (OTA) DTMF tones and responding with a variety of remote commands.

BASIC DESCRIPTIONS: REMOTE COMMANDS

Inspection Code:

When this command is received the radio will respond with its ANI (Automatic Number Identification). By using inspection, you can confirm that a unit is within receiving range. This can be used for remotely testing range and reception by confirming when a UV-5X3 is within receiving range.

Monitor Code:

When this command is received the radio will remotely open up its microphone and transmit for 15 seconds. By using Monitor, you can remotely monitor a UV-5X3's environment, along with the transmitted audio quality.

Alarm Code:

When this command is received, it will enable the strobe and siren on the UV-5X3.

This can be used in conjunction with most BaoFeng and BTECH handhelds with the built-in alarm feature (which service as a remote 'man down call').

The default ALARM Code is '119'. To enable BaoFeng/BTECH handhelds to be automatically compatible – set your "Alarm Mode (Menu 32)" on any BaoFeng or BTECH handheld to 'Code'. They will now transmit the default '119' command when the alarm side key is pressed

Stun Code:

When this command is received the radio will be disabled from transmitting until it is revived by the "Revive Command". The user will have limited abilities to change channels and menu options; but will not be able to transmit.

** Since the user is able to access menus, it would be advised to disable the reset menu in software. With the reset menu still accessible in the *Stunned mode*, the user would be able to manually allow transmitting with a forced menu reset (but this would also clear programmed channel information and DTMF information)*

Kill Code:

When this command is received the radio will be disabled from transmitting or receiving until it is revived by the "Revive Command". The user will have limited abilities to change channels and menu options; but will not be able to transmit or receive.

** Since the user is able to have limited access to edit menus, it would be advised to disable the reset menu in software. With the reset menu still accessible in the *Killed mode*, the user would be able to manually allow transmitting and receiving with a forced menu reset (but this would also clear programmed channel information and DTMF information)*

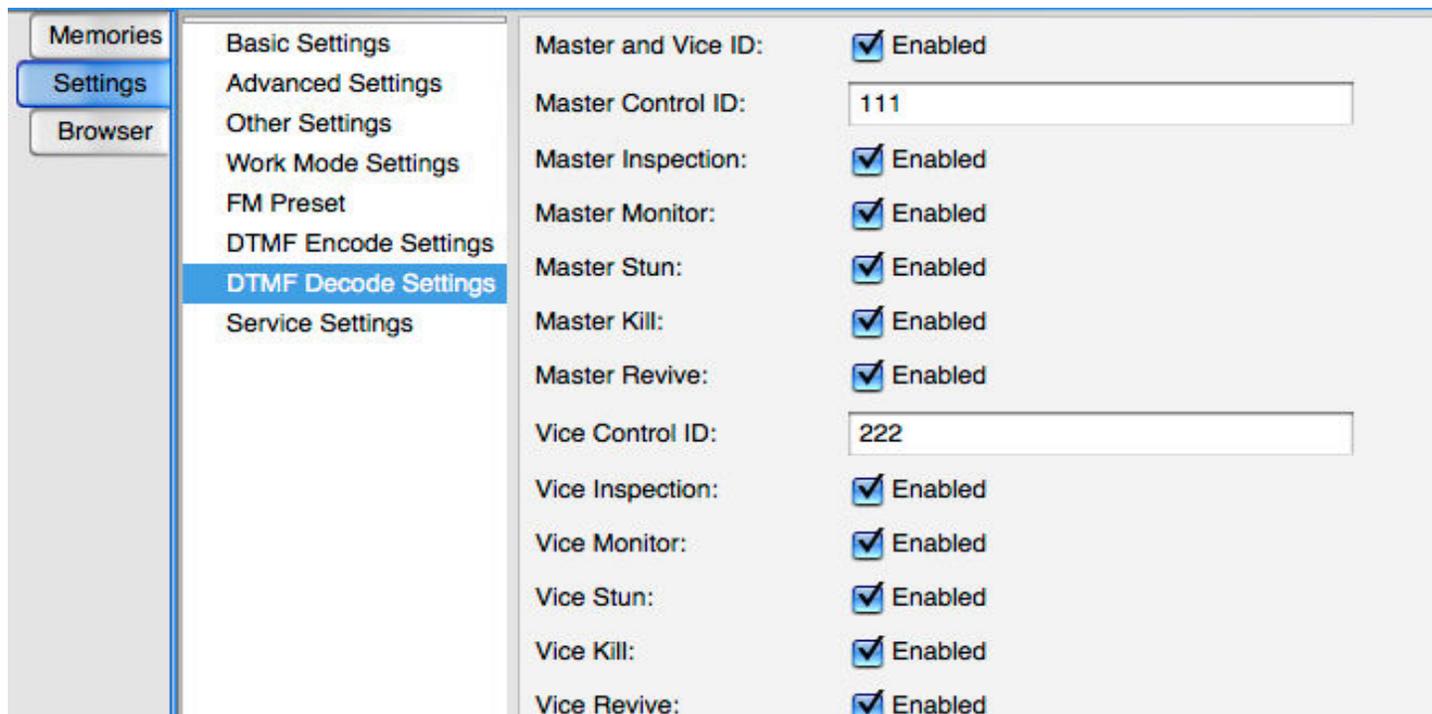
Revive Code: When this command is received, the UV-5X3 will be revived from the "Killed mode" or "Stunned Mode". This will reinstate abilities to transmit and receive.

USER LEVELS, DETAILS AND PROGRAMMING

There are two user levels that can be assigned unique DTMF IDs: Master and Vice

You can assign each user level to have permission for all, or just some of the remote commands (Inspection, Monitor, Stun, Kill, and Revive).

This CHIRP screenshot is below:



PROGRAMMING THE DECODE (RECEIVING) REMOTE COMMANDS (CHIRP):

This illustration uses the below Decode (receiving) settings, in CHIRP, for our demonstration

Memories	Basic Settings	Master and Vice ID:	<input checked="" type="checkbox"/> Enabled
Settings	Advanced Settings	Master Control ID:	111
Browser	Other Settings	Master Inspection:	<input checked="" type="checkbox"/> Enabled
	Work Mode Settings	Master Monitor:	<input checked="" type="checkbox"/> Enabled
	FM Preset	Master Stun:	<input checked="" type="checkbox"/> Enabled
	DTMF Encode Settings	Master Kill:	<input checked="" type="checkbox"/> Enabled
	DTMF Decode Settings	Master Revive:	<input checked="" type="checkbox"/> Enabled
	Service Settings	Vice Control ID:	222
		Vice Inspection:	<input checked="" type="checkbox"/> Enabled
		Vice Monitor:	<input checked="" type="checkbox"/> Enabled
		Vice Stun:	<input checked="" type="checkbox"/> Enabled
		Vice Kill:	<input checked="" type="checkbox"/> Enabled
		Vice Revive:	<input checked="" type="checkbox"/> Enabled
		Inspection Code:	101
		Monitor Code:	202
		Alarm Code:	303
		Stun Code:	404
		Kill Code:	505
		Revive Code:	606
		Group Code:	#
		Space Code:	*
		Reset Time:	8100 ms
		Delay Processing Time:	500 ms

[0] Completed Setting radio settings (idle)

Inspection, Monitor, Stun, Kill, and Revive require a User Level Permission with the remote command.

Alarm is the only remote command without a User Level Permission required.

To Send a Remote Command:

Transmit the DTMF Sequence: 'Command Code' + 'Space Code' + 'User ID'

The default space code is '*'; you may have it set differently in software.

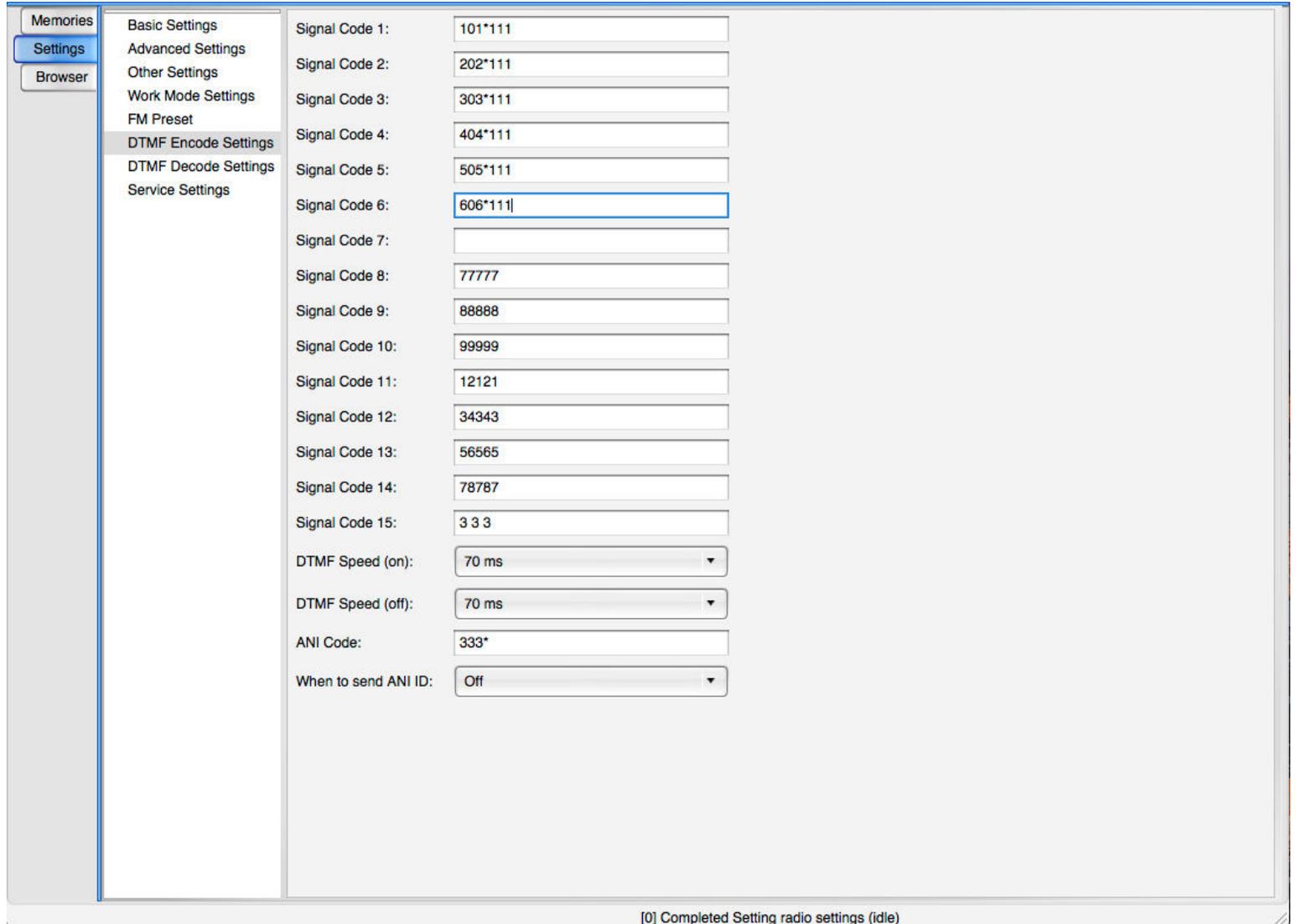
Using the above settings - to send the Inspection Command you would transmit:

Using Master ID: '101' (Inspection Code) '*' (Space Code) '111' (User Level) = '101*111'

Using Vice ID: '101' (Inspection Code) '*' (Space Code) '222' (User Level) = '101*222'

PROGRAMMING THE ENCODE (TRANSMITTING) REMOTE COMMANDS (CHIRP):

The UV-5X3 has the ability to store 15 DTMF remote commands. In this section we will reference the previous settings we just stored in our last section. The encode commands we will be storing are:



The screenshot displays the 'DTMF Encode Settings' menu in the UV-5X3 radio's settings application. The interface includes a sidebar with navigation options: Memories, Settings (selected), and Browser. The main settings area is divided into sections: Basic Settings, Advanced Settings, Other Settings, Work Mode Settings, FM Preset, DTMF Encode Settings (highlighted), DTMF Decode Settings, and Service Settings. The DTMF Encode Settings section contains 15 signal code fields, each with a dropdown menu for DTMF Speed (on) and DTMF Speed (off), and an ANI Code field with a dropdown for 'When to send ANI ID'. The signal codes are: 101*111, 202*111, 303*111, 404*111, 505*111, 606*111 (highlighted), 77777, 88888, 99999, 12121, 34343, 56565, 78787, and 3 3 3. The DTMF Speed (on) and DTMF Speed (off) are both set to 70 ms. The ANI Code is 333* and 'When to send ANI ID' is set to Off. A status bar at the bottom indicates '[0] Completed Setting radio settings (idle)'.

Signal Code	DTMF Speed (on)	DTMF Speed (off)	ANI Code	When to send ANI ID
Signal Code 1:	70 ms	70 ms	333*	Off
Signal Code 2:	70 ms	70 ms	333*	Off
Signal Code 3:	70 ms	70 ms	333*	Off
Signal Code 4:	70 ms	70 ms	333*	Off
Signal Code 5:	70 ms	70 ms	333*	Off
Signal Code 6:	70 ms	70 ms	333*	Off
Signal Code 7:	70 ms	70 ms	333*	Off
Signal Code 8:	70 ms	70 ms	333*	Off
Signal Code 9:	70 ms	70 ms	333*	Off
Signal Code 10:	70 ms	70 ms	333*	Off
Signal Code 11:	70 ms	70 ms	333*	Off
Signal Code 12:	70 ms	70 ms	333*	Off
Signal Code 13:	70 ms	70 ms	333*	Off
Signal Code 14:	70 ms	70 ms	333*	Off
Signal Code 15:	70 ms	70 ms	333*	Off

In Signal Codes 1-6, we have stored the 6 commands in the same order that they appeared in the previous example. We are using the Master ID as the user ID for sending these commands.

SENDING AND RECEIVING A COMMAND:

In this example, we will be sending a command from a UV-5X3 to another UV-5X3 (which are programmed according to the previous sections). This example also assumes that you already have the radio channels programmed and the radios are on the same frequency

First we will enable our sending radio to transmit DTMF tones from the S-CODE Storage bank. This is done from 'Menu 19' on the UV-5X3 (PTT ID).

You can set the S-Code to transmit at either: BOT, EOT, BOTH, or OFF (beginning of transmission, ending of transmission, both, or off). In this example we will set our S-Code to Transmit at 'EOT' (at the end of transmission, (after releasing the PTT)).

Menu 19 (PTT-ID) is a shared DTMF dialing menu used by both ANI (Automatic Number Identification) and S-CODE (Signal Code). In CHIRP, you will set when ANI dialing will be used (if at all). You can select ANI to be used with PTT-ID on: BOT, EOT, Both, or Off.

S-CODE dialing will be enabled on the PTT-ID settings that ANI dialing is *not* enabled for. In this example we had previously set ANI dialing to 'off'. This allowed S-CODE dialing to work on all items in Menu 19 (PTT-ID).



Memories	Basic Settings	Signal Code 1:	101*111
Settings	Advanced Settings	Signal Code 2:	202*111
Browser	Other Settings	Signal Code 3:	303*111
	Work Mode Settings	Signal Code 4:	404*111
	FM Preset	Signal Code 5:	505*111
	DTMF Encode Settings	Signal Code 6:	606*111
	DTMF Decode Settings	Signal Code 7:	101*##1
	Service Settings	Signal Code 8:	77777
		Signal Code 9:	88888
		Signal Code 10:	99999
		Signal Code 11:	12121
		Signal Code 12:	34343
		Signal Code 13:	56565
		Signal Code 14:	78787
		Signal Code 15:	30303
		DTMF Speed (on):	70 ms
		DTMF Speed (off):	70 ms
		ANI Code:	333*
		When to send ANI ID:	Off

Now that we have enabled S-CODE to be transmitted at the end of transmission (via Menu 19); we can now select the S-CODE we want to transmit. We will do this from the Menu 17 (S-CODE).

In this example we will transmit S-CODE 1, which was the 'Inspection code' with the Master ID user level: '101*111'

By confirming S-CODE 1 is selected in Menu 17, exit the menu and simply momentarily press the PTT button on the same channel that the receiving UV-5X3 is on. Once you have released the PTT, the DTMF command for Inspection will be transmitted over the air. Depending on how you have Menu 16 set, you may or may not hear your DTMF tones being sent.



You should have successfully enabled the Inspection command on the receiving UV-5X3. This is confirmed by the UV-5X3 that was 'inspected' replying with its ANI (automatic number identification).

You can also send Commands by simply dialing them on a DTMF keypad over-the-air

OTHER SETTINGS TO MENTION:

In CHIRP DTMF Decode Settings you can set a couple other items:

Reset Time: This is the time that a DTMF command has to be sent once the first DTMF tone is received. In our examples we were allowing 8100ms (8.1 seconds) from the first to the last tone.

Delay Processing Time: This is the time that it takes before the radio will respond to the command it was given. We set our examples to 500ms (half a second)

In CHIRP DTMF Encode Settings you can set a couple other items:

DTMF Speed (on): This is the time that a DTMF tone is played over the air, in our example we used 70ms.

DTMF Speed (off): This is the time in between DTMF tones being sent over the air, in our example we used 70ms.

Conclusion:

Once you have the encode (receiving) commands set and the decode (storage/transmitting) commands set, it should only take a matter of seconds to send remote commands from one UV-5X3 to another UV-5X3

Several radios can store and send DTMF commands. Consult with that radio's user guide for the procedure for storing and sending DTMF commands.